Coupled Layer Architecture for Robot Autonomy (CLARAty)

▶ opportunity

NASA's Jet Propulsion Laboratory is looking for a licensing partner for its Coupled Layer Architecture for Robot Autonomy (CLARAty) software architecture and functional layer software packages.

▶ overview

NASA seeks an innovative partner for development of a generalized autonomous robotics software platform based on a two-layer architecture, comprising functional and decision layers. The functional layer is responsible for performing actions and coordinating sensing and actuation; the decision layer is responsible for determining which actions to perform, as well as operations such as sequencing and resource analysis.

The CLARAty Functional Layer Software Packages provide these generic robotic functions:

- Motion Control Estimation
- Input / Output
- Manipulation
- Vision / Perception
- Mobility
- Navigation
- Communications
- System Control

CLARAty provides a platform geared to autonomous systems, but suitable for use across a wide range of robotic designs and applications. Users can employ generic functions for common or minimal robotic operations, while the ability to extend functionality to particular applications is retained.

Since acknowledged standards in the robotics industry are lacking, the partnering firm would have the opportunity to help develop the robotics standards of the future. A standardized framework will allow the development of a common software infrastructure capable of interfacing into, and controlling, robot systems across dissimilar applications (e.g., manipulators, welders, mobile platforms, surgical units, vision units, machine tools, etc.).

▶ applications

- General robotics, especially autonomous or semiautonomous mobile units.

- Factory automation

- Healthcare and surgical

- Hazardous materials handling

- Domestic functions (elderly and disabled support)

- Exploration (oceanographic, terrestrial and extra-terrestrial)

- Maintenance of general environments

▶ stage of development

This software is a prototype; however, the system is employed on the current Mars research rover prototypes.
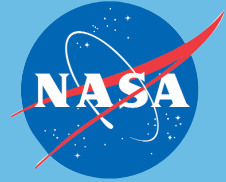
▶ benefits

This technology provides a robotic platform base that is applicable to virtually all robotic systems and that relieves the developer from reinventing these basic functionalities.

Further, a standardized functional platform with standardized hardware interfaces would simplify future robotics development and introduce a modular, transportable, scalable, and extensible base that allows the developer to focus on the application for a particular robot.

Provision of a generic software core and standardized hardware interfaces provide an intuitive baseline for specific functional robot development for many applications.

▶ contact us

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